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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,130	03/12/2004	Yoshihiro Kobayashi	9319S-000733	6935
27572	7590	04/04/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			CHAPMAN JR, JOHN E	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	

2856

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/800,130	Applicant(s) KOBAYASHI, YOSHIHIRO	
	Examiner John E. Chapman	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/12/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Communication from the Japanese Patent Office filed on December 12, 2005 has not been considered because an English language translation has not been provided. It has been placed in the application file, but the information referred to therein has not been considered as to the merits.
2. Claims 5-7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to further limit the subject matter of a previous claim. Merely to call the measurement signal output circuit of claim 2 “a measuring apparatus” does not further limit the subject matter of claim 2. If additional structure is required to make the measurement signal output circuit of claim 2 into “a measuring apparatus,” then such added structure should be recited in claim 5. Likewise for claims 6 and 7 with regard to claims 3 and 4.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larue (5,705,399) in view of Horowitz et al. (1980) or Hirono et al. (6,756,793).

Larue discloses a method and apparatus for measuring a change in a sensor mass from a change in the resonant frequency of a crystal detector oscillator 2 in Fig. 2. While it is not

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evident that the crystal detector oscillator 2 of Larue comprises a “reed,” the use of a reed in a quartz crystal microbalance (QCM) is well known in the art, as admitted by the applicant on page 1 of the specification. Furthermore, the crystal oscillator 42 in JP 7-43284 appears to be the same as the crystal detector oscillator 2 of Larue, and applicant describes the former as a “reed” on page 2, line 18. The crystal detector oscillator 2 of Larue is oscillated by an oscillator circuit that outputs an output signal f_2 in Fig. 3 representative of the resonant frequency of the detector (column 13, lines 1-3). The output signal f_2 is combined with a reference signal f_1 to provide an output signal Δf that also indicates the resonant frequency of the detector. The output signal Δf is input into a conventional means that may be a frequency/voltage converter (column 13, line 7) to yield an output signal S representative of the oscillation frequency of the crystal detector oscillator. Hence, the only difference between the claimed invention and the prior art consists in the use of a phase lock loop circuit as a frequency/voltage converter. It is well known to use a phase lock loop in order to provide a voltage output proportional to the input frequency, as evidenced by Figure 9.61 of Horowitz et al. and Figure 5 of Hirono et al. Accordingly, it would have been obvious to use a phase lock loop as a conventional means to convert the frequency of the crystal detector oscillator 2 of Larue into a voltage output signal S representative of the oscillation frequency of the crystal detector oscillator.

It is noted that the “oscillator circuit” recited in claims 1 and 2 does not appear to preclude the inclusion of the signal comparison means in Fig. 3 of Larue. Regardless, it would have been obvious to one of ordinary skill in the art that the purpose of the signal comparison means is to provide a normalized crystal detector oscillator resonant frequency (column 13, line 10) and it would have been obvious to eliminate the signal comparison means in Fig. 3 of Larue

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where it is desired to obtain the non-normalized crystal detector oscillator resonant frequency f_2 .

The omission of an element and its function in a combination, where the remaining elements perform the same functions as before, involves only routine skill in the art. *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975); *In re Karlson*, 311 F.2d 581, 136 USPQ 184 (CCPA 1963).

Regarding claims 3 and 6, Larue teaches a species-specific material for contacting a species-containing solution (column 10, lines 15-20).

5. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larue in view of Horowitz et al. or Hirono et al. as applied to claim 1 above, and further in view of Duncan (6,041,642) or Roukes et al. (6,722,200).

The only further difference between the claimed invention and the prior art consists in providing a sensitive membrane for contact with air. Duncan teaches that it is known in the art to provide a coating which will absorb a gas (column 1, lines 18-23) and Roukes et al. teaches the use of a micro-electromechanical device to detect gas phase species. Accordingly, it would have been obvious to adapt the sensitive membrane of Larue for the purpose of measuring a gas phase species in air.

6. Applicant's arguments filed December 12, 2005 have been considered but are moot in view of the new ground(s) of rejection.

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7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).


Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John E. Chapman whose telephone number is (571) 272-2191. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John E Chapman
Primary Examiner
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